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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

UTILITY PATENT APPLICATION

PRESHAPED FORM

Inventor: Dan Rodlin

RELATED APPLICATIONS

This application is a continuation in part of application serial number 10/679,720 filed on October 6, 2003 which is a divisional of application serial number 10/679,720 filed on October 6, 2003 which is a divisional of application serial number 10/254,038 filed on September 24, 2202 now U. S. Patent No. 6,662,213 which is a continuation of patent application serial number 08/967,055, filed on November 10, 1997 now U.S. Patent No. 6,591,566 which is a continuation in part of application serial number 08/441,251filed May 15, 1995 now U.S. Patent No. 5,685,116, which is a continuation of patent application serial number 08/222,826 filed on April 5, 1994 now abandoned, the contents of all of which are incorporated herein by reference.

BACKGROUND OF THE INVENTION

Field of the Invention

The invention relates to prefabricated, light-weight, plaster relief forms to provide quick, low cost, installation of support members for constructing plaster coated decorative architectural trim elements sometimes called "plant-ons" or "bump-outs" applied to the outside walls of structures.

Previous Art

Ornamentation and decoration of building structures such as residences and businesses is one important aspect of architecture. Marketing and sale of residences is enhanced by additional decorative detail. Pride of ownership is also enhanced by improved appearance of one's building or residence. Ornamentation and decorative details are used extensively to add desirability and attractiveness to structures.

In certain regions of the country, such as the West and Southwest, the homes in the Mission style, and the Mediterranean style are quite popular. One of the popular methods of ornamentation used for these styles of homes is referred to in the building trades as "plant-ons" or "bump-outs". The plant-ons may extend for a considerable length along the horizontal or vertical dimension of a wall or walls of a home or business. The plant-ons add a band or bands of relief to an otherwise blank façade that is presented by an unbroken expanse of plaster or stucco. The bands may extend completely around the outside perimeter of a building. For a

conventional home of 2500 sq. ft., this may amount to 300 – 500 ft of bands for one single layer. The support for these bands are generally made of overlapping wooden boards including a first layer of 2 X 12 inches and a second layer of 2 X 8 inches. The boards are placed end to end in standard lengths of 8 to 12 ft to create a continuous relief band around the home. Similar bands may be constructed around door and window openings.

Attractive relief borders around windows and doors are also used to provide enhancements to the architecture of homes and buildings. Such window and door borders have been constructed using the above methods and materials.

These features are not necessary to the structural integrity of the building, but do add a pleasing visual aesthetic appearance to a home or business.

One example of architectural relief products for attachment to homes are pre-shaped foam members such as cornices, bases, sills and balusters, for example, supplied by High Tech Foam Products, Inc of Corona, CA. Foam members may be provided in a wide variety of shapes and sizes. The disadvantage of these members as supports for relief bands include the expense of the items themselves, on the order of $5 to $6 per linear foot, and the additional labor and material involved in adding a layer of screening or lath material over the foam to provide a matrix for the plaster to adhere.

A conventional method of construction of plant-ons uses one or more planks of overlapping boards attached to a wall at a particular height. To achieve a continuous band or strip of relief, multiple lengths of uniform cross section boards are aligned end to end and attached to the studs of a prepared wall. For conventional construction, the studs must be no more than 24 inches on center, or less, according to the applicable local, state or national building codes. The attachment is done with hammer driven nails, power gun driven nails, large staple guns or the like. The boards are attached to the wall prior to the application of a plaster coat or coats and prior to the application of a lath sheeting which will form a matrix or lattice for supporting the plaster when it is applied. The lath is conventionally made of chicken wire or expanded metal and attached with nails, staples or the like. The lath sheeting may be suspended away from the wall and boards by a furring strip or strips interposed between the surface of the wall and the sheeting. Self furred sheeting or wire may also be used to maintain the spacing between the wall and the sheeting. An example of such wire is self-furred metal lath made by California Expanded Metal Products Company of Industry, CA. "Dimpled" or ribbed type self

furring metal lath provides a ¼ inch indentation in the metal lath to hold it away from the wall allowing the plaster to fill the space between, insuring the lath is embedded. The spacing between the lath and the wall or boards provides the opening for the plaster coat to surround the lath and thereby bond firmly to the wall. A moisture barrier layer, of building paper, for example, is applied between the boards and the lath sheeting by means of staples, nails, an adhesive coating or the like.

The boards provide the relief pattern or bump-out desired. Additional screening is cut and shaped by hand to conform to the protruding bump-out and nailed or stapled to the boards and the wall.

Plaster is then applied to the bump-out and the wall to form the finished surface.

With reference to Fig. 10A, there is shown a schematic diagram of an exploded view of one previous art method of assembly for a manually fabricated plaster relief form as described above. A plurality of boards of desired width with the same cross section are aligned end to end and nailed to the prepared wall to form a continuous plaster relief band to the desired length. Additional lengths of wire screen or lath sections may be placed over the boards and formed by hand to the contour of the boards. The additional sections are then typically nailed in place. Fig. 10B illustrates a cross section of such a relief form having a board attached to a stud framed wall. A layer of moisture barrier paper and metal screen or lath are typically placed against the wall and attached by nails to the studs. A plurality of spacers, such as furring strips or dimples in the additional screen sections, are provided between the boards and the additional wire screen sections to allow the subsequent plaster layer to flow into the openings of the wire screen sections and fill the space between the screens and the top of the boards. Plaster is then typically applied by hand using a hawk and trowel method or applied with a nozzle connected to a machine as described above.

With reference to Fig. 10C, an additional improvement to the previous art method is shown. Guide edge members are attached, typically by nailing into the form boards, to the edges of the wire screen sections over the plaster form boards. The guide edges are spaced apart from and aligned to be parallel with the plaster form boards. The guide edge members provide a guide to the trowel or plaster dispensing nozzle as the plaster is applied, thereby allowing a uniform depth of plaster to be applied easily. Representative guide edge members used in the trade are made from 14 gauge wire such as the "CEMCORNER" corner reinforcement made by Cemco,

Covina Lane, CA. Or the "CornerAid" cover nose wire made by Stockton Products, Burbank, CA.

The above-described method requires a number of hand operations, such a nailing the boards, cutting the additional wire screen sections, hand forming the screen sections over the boards and attaching the guide edge members, which significantly increases the cost of applying plaster relief bands. It would be an advantage to provide a system to reduce the number of hand operations required to apply plaster relief bands.

It is important to select boards made of wood which are of uniform cross section, in order to achieve a visually pleasing effect. Boards which are not uniform in thickness or width will show angular offsets at the ends where they meet. It is also important to select wood which is well cured and has stable dimensional shape. If the wood twists or otherwise deforms after the plaster has dried, unsightly cracks may appear. Cracks may also allow moisture to penetrate the plaster and attack the wood beneath, or provide additional unwanted access to wood destroying pests. Boards of suitable quality currently sell for $2 to $3 per linear foot. On a double band board structure, the cost could be from $15 to $18 per linear foot, after including the costs of boards, lath application and finished plaster.

The use of wood for forming the support structure for the plaster of decorative bands is well known in the trade. As the costs of wood continue to increase, and the availability of high quality boards continues to diminish, there is an urgent need to provide an alternative low cost structure which will satisfy the desire for aesthetic enhancements to the various stucco and plaster styles of home and office.

The non-uniformity of wooden boards in width and thickness can cause unsightly mismatch in the appearance of the relief bands on a home. Either higher quality and thus higher cost boards must be purchased, or labor intensive and expensive modification must be made on the job site. This slows down the assembly process and further adds to the cost of building. It would be an advantage to provide a support structure for plaster relief bands which would guarantee uniformity in cross section aspect and thus match precisely when aligned at the ends.

The weight of the wood used for the band support structure creates several concerns. Handling and aligning long lengths of boards takes considerable strength and capability. Moving and holding a 12 foot length of board may require two workers to align successive boards. The cost of shipping the wood used in making the band supports is also a factor in the cost of

building plaster or stucco homes. Wood often is shipped in a condition wherein it contains an appreciable amount of water which significantly increases the weight of the wood. Wood typically contains 30% or more water by weight. Such additional weight is of no use and in fact may be harmful as described above. Wood used for decorative support may also be stored outdoors while awaiting construction. It is possible for the wood to absorb moisture from the surroundings thereby increasing its' weight even if it had been shipped in an originally dry state. It would be an advantage to have a band support structure which is lighter in weight, thereby reducing the cost and time of installation and the cost of shipping to the job site. It would be an additional advantage to provide a band support structure which could not absorb water while stored at a building site.

The use of wood as a building material combined with increased demands from a growing population puts increasing pressure on our forest preserves. It would be an advantage to provide a substitute material which would reduce the need to use wood except where it is most effective, thereby preserving our valuable resources.

Even though the wood for plant on bands is covered by fire-resistant plaster, the building codes still require the bands to be considered flammable structures. It would be an advantage to provide a substitute material which was impervious to fire, and thereby add increased safety to homes and buildings.

SUMMARY OF THE INVENTION

The general purpose of the invention is to provide light weight, low cost prefabricated plaster relief form members which can be shipped to a construction job site in final form to simplify the application of relief bands to the exterior of homes and buildings which are to be coated with a cementitous coating, typically plaster or stucco.

According to one embodiment of the invention a prefabricated plaster relief form member is provided for receiving and retaining a fluid cementitious coating, such as plaster, when the member is attached to a prepared structural wall.

The member is configured from an openwork lattice sheet, preferably of an expanded metal lath. The lattice sheet is adapted to receive and retain the plaster when the plaster when the plaster is applied by hand or by spraying with a nozzle of a machine. The lattice sheet is formed into a longitudinal channel having a top with opposed outer edges.

Two spaced apart sides extend away from the respective opposed outer edges, to respective base edges. The respective base edges are aligned parallel to the top such that a mounting plane is defined parallel to the top of the channel.

Two mounting flange portions, each extending outward and away from the base edges of the respective sides, lie within the mounting plane parallel to the channel.

The member is thus defined as a channel having a length between two opposed ends and a width between the two opposed sides. The channel is configured to have an essentially uniform lateral cross section, perpendicular to the longitudinal dimension, protruding away from the mounting plane.

The flange sections are adapted for mounting to the prepared structural wall such that a plurality of such members mounted on the structural wall and adjoined end-to-end form a continuous relief band protruding from the wall. The flange sections may be nailed or stapled to the studs of a prepared wall after adjacent form members are aligned and adjoined end-to-end.

The regular cross section of similar prefabricated form members ensures an aesthetically pleasing effect is easily achieved without shaving, trimming or selecting wooden boards.

The light weight and regular shape of these prefabricated members enable for easy and low cost installation of the support forms needed for applying relief bands to stucco homes and buildings.

The metal lath or lattice work is light, but has sufficient strength to support the plaster coating and hold it in place while it cures. The prefabricated shape enables the construction of plaster relief bands without the use of wood boards and the additional weight and shipping cost involved. The cells and strands of the lattice work provides openings for the plaster to flow and provides a secure network for the plaster to take hold while it hardens.

The uniform shape of the form member is dimensionally stable and not subject to absorbing water. This eliminates the potential of warping that occurs with the use of wood as support members for relief bands.

The combination of the structural support and the open lattice in the one element of the prefabricated form member reduces the labor that otherwise is involved in attaching sheets of screen wire to the wood planks used in conventional construction.

In another embodiment of the prefabricated form member, there is provided at least one edge guide segment parallel to and spaced apart a preselected distance from at least one of the

channel outer edges. The edge guide segment is aligned parallel to the length of the member and is configured to provide a guide edge for a tool. A connecting frame is provided for rigidly connecting the edge guide segment to the member such that the edge guide segment provides a secure guide edge for a tool used to apply the plaster or stucco coating to a preselected thickness along the length of the member. A preferred thickness of plaster coating is about 7/8 inch minimum in the finished state.

The prefabricated form member is typically formed from expanded, galvanized metal having a preformed weight of about 3.4 pounds per square yard. The lattice is shaped into an array of elongated hexagons, the hexagons having a major axis of about ½ inch and a minor axis of about 3/8 inch. The adjacent hexagons along the minor axis being connected at opposed sides by respective common side segments of about 1/8 inch in length, and adjacent hexagons along the major axis being connected at the ends of respective 3/8 inch common end segments, while the respective side and end segments are connected by corresponding right and left angled linking segments.

A prefabricated form member as described above is non-permeable to water, non-flammable and semi-rigid and has a lateral strength sufficient to support a plaster coating having a thickness from about ½ inch in thickness, to about 2 inches in thickness.

It is an advantage in accordance with this invention to provide plaster relief form members which eliminate the use of lumber in achieving architectural enhancement effects.

It is a further advantage in accordance with this invention to provide plaster relief form members which reduce cost of installation.

It is a further advantage in accordance with this invention to provide plaster relief form members which are lower in weight than equivalent lumber elements.

It is a further advantage in accordance with this invention to provide plaster relief form members which reduce the cost of shipping members to the job site.

It is a further advantage in accordance with this invention to provide plaster relief form members which are uniform in cross section and impervious to warping or cracking.

It is a further advantage in accordance with this invention to provide plaster relief form members which reduce the number of hand operations and thereby reduce the cost of installation.

It is a further advantage in accordance with this invention to provide plaster relief form members which are non-flammable.

It is a further advantage in accordance with this invention to provide plaster relief form members which may be mass-produced in a wide variety of standard shapes at low cost.

It is a further advantage in accordance with this invention to provide plaster relief form members which can be easily joined end-to-end to form visually uniform relief bands on outer walls, around door or window openings and along the facia of a building. The relief bands have stable shape with age and are resistant to warping and cracking due to moisture absorption/desorption.

It is a further advantage of the present invention to use welded wire lath to form the form member absent any other structural support member.

It is a further advantage to add edge guides to the welded wire form member.

It is a further advantage to form the member out of rib lath, preferably by placing the rib members at the corners of the top and sides of the channel and in addition to depress the top from the corners so that the ribs provide edge guides, and absent any other structural support member.

It is a further advantage to form the member out of woven wire lath also known as chicken wire, and preferably of the self furring form, absent any other structural support member, and in addition, preferably with edge guides applied to the corners of the top and side of the channel.

It is a further advantage, where edge guides applied to corners of the top and sides of the channel are cut-down to have shorter side extensions.

In further embodiments, the invention resides in the construction of relief form members using elongated welded wire assemblies having legs portions that are joined at a corner portion, the leg portions being at a selected angle and the corner portion having at least one lengthwise extending tool guide wire. In a basic configuration welded wire side members are positioned oppositely with the corner portions defining a corner of the relief form member and the legs defining as height. The two assemblies are fastened together, hot melt glue being an exemplary fastening material. For best use a paper sheet is placed in the space formed by the wire assemblies and fastened to them. The relief from is fastened to a wall and then plaster is applied to create a trim element. In the simplest form a rectangular profile is created. The two opposed wire assemblies can be adjusted to place the corners closer or further apart to create a desired width dimension for the rectangular profile. A channel member of wire assembly can be placed

between the two side members to allow greater width selection. The height can be adjusted by selecting the angle between the leg portion; a greater angle resulting in more height and a smaller angle resulting in less height. By stacking, more complex profiles can be accomplished such as a two step profile in which a smaller profile is set on top of a wider profile.

In further embodiments, the invention resides in a prefabricated relief form member in which the wire assemblies are corner aids to define the height and width of a relief form and the use of glue to hold them together.

In further embodiments, the invention resides in a prefabricated relief form member having corner aids to define the height and width of the relief form and paper under the corner aids.

In further embodiments, corner aids define side corner aids and one or more additional corner aids which define channel corner aids.

In further embodiments a method of making relief form members uses welded wire assemblies, in one particular, corner aids, by placing two side wire assemblies oppositely and fastening them together.

These and further embodiments of the invention are set out in the claims as filed, amended and issued.

BRIEF DESCRIPTION OF THE DRAWINGS

For a further understanding of the objects and advantages of the present invention, reference should be had to the following detailed description, taken in conjunction with the accompanying drawings, in which like parts are given like reference numerals and wherein;

Fig. 1 is an exploded perspective view of prefabricated plaster relief forms members aligned end to end in accordance with this invention.

Fig. 2 is a plan view of a section of expanded metal lath used as the open work lattice material to make a preformed plaster relief form member in accordance with this invention.

Fig. 3 is a perspective view of an alternative prefabricated relief form member having a paper backing.

Fig. 4 is a perspective view of an alternative prefabricated plaster relief form member angled to fit around intersecting walls.

Fig. 5 is a perspective view of an alternative prefabricated plaster relief form member angled to fit around door or window casings.

Fig. 6 is a perspective view of an alternative prefabricated plaster relief form member having a prefabricated guide edge member in accordance with this invention.

Fig. 7 is a cross section taken along viewing plane 7-7 of Fig. 6.

Figs. 8a and 8b are cross sections of two alternative plaster relief form members in accordance with this invention.

Fig. 9 is an exploded perspective view of two plaster relief form members aligned end-to-end on a structural wall.

Fig. 10A is a perspective view of a previous art method of attaching hand made plaster relief forms made of wood and wire screen.

Fig. 10B is a cross section of a previous art hand made plaster relief form.

Fig. 10C is a cross section of a previous art hand plaster relief form having separate guide edge members manually attached.

Fig. 11 is a perspective exploded diagrammatic view of a channel formed from welded-wire lath in accordance with this invention.

Fig. 12 is an end view of a preferred form of the invention shown in Fig. 11 in accordance with this invention.

Fig. 13 is a diagrammatic view of the invention as shown in Figs. 11 and 12 with edge guides added, in accordance with this invention.

Fig. 14 is a diagrammatic, exploded end view, of a form member made from edge guides in accordance with this invention.

Fig. 15 is a diagrammatic end view of a form member made from rib lath in accordance with this invention.

Fig. 16 is a diagrammatic perspective view of a form member made from woven wire also known as chicken wire, with edge guides attached in accordance with the invention.

Fig. 17a is an end view of a type of corner bead.

Fig. 17b is a top view of the corner bead of Fig. 17a with the side extensions rotated into a plane.

Fig. 18 is a diagrammatic end view of a generic form member with a cut-down edge guides in accordance with the invention.

Fig. 19 is a schematic end view of a corner aid used for relief forms according to the invention.

Fig. 20 is a schematic end view of a modified corner aid used for relief forms according to the invention.

Fig. 21 is a schematic end view of a relief form.

Fig. 22 is an end view of a fixture for modifying corner aid used for relief forms according to the invention.

Fig. 23 is a view of a fixture for making relief forms according to the invention.

Fig. 24 is a view of a relief form made and a bracket used for making relief forms according to the invention.

Fig. 25 is an end schematic view of an architectural trim member made according to the invention.

Fig. 26 is a channel corner aid for use in the invention.

Fig. 27 is a relief form according to the invention.

Fig. 28 is another relief form according to the invention.

Fig. 29 is another relief form according to the invention.

Fig. 30 is a sketch of a relief form according to the invention.

Fig. 31 is a sketch of a relief form of another relief form according to the invention.

Fig. 32 is a sketch of a relief form of another relief form according to the invention.

Fig. 33 is a sketch of a relief form of another relief form according to the invention.

Fig. 34 is a sketch of a profile of an architectural trim member made from the relief form of Fig. 33.

Fig. 35 is a sketch of a relief form of another relief form according to the invention.

Fig. 36 is a sketch of a relief form of another relief form according to the invention.

Fig. 37 is a sketch of a profile of an architectural trim member made from the relief form of Fig. 36.

Fig. 38 is a sketch of another relief form.

Fig. 39 is a profile of an architectural trim made form the relief form of Fig. 38.

Fig. 40 is a sketch showing an architectural trim and the relief form used to make it.

DETAILED DESCRIPTION OF A PREFERRED EMBODIMENT OF THE INVENTION

With reference to Fig. 1, there is shown an embodiment of the prefabricated plaster relief form member in accordance with this invention, generally referred to by the numeral 20. The member 20 is shown aligned end-to-end with similar members 20a and 20b. The member 20 is formed from an open lattice material 22 such as 3.4 lb/sq. yd. diamond mesh expanded metal made by Western Metal Lath Company of San Leandro, CA. The lattice material 22 is bent on a tool such as a sheet metal brake in a metal shop to form a longitudinal channel having a protuberant contour 30 with a top surface 31, opposed sides 34, 36 at essentially right angles to surface 31, and opposed ends 38, 40. The sides 34, 36 of lattice material 22 are bent to form flanges 42, 44 extending at essentially right angles away from the respective sides 34, 36 of the member 20. The flanges 42, 44 are configured to lie in the same mounting plane 46 indicated by the arrows x, y. The mounting plane 46 and flanges 42, 44 are essentially parallel to the length L of the member 20. The depth D of the member 20 is typically about 1-1/2 inches, the width W typically about 6 to 12 inches and the length L typically 6 to 10 feet. The flanges 42, 44 extend a distance F typically about 1-1/2 inches respectively from each side 34, 35. The member 20 is configured so that each end 38, 40 can abut contiguously at each end 38, 40 with adjacent identical members, as indicated by members 20a and 20b, to form a continuous relief band when mounted on a prepared structural wall. The application and method of use of prefabricated plaster relief bands is described below.

The members 20, 20a, 20b would typically be fabricated at a remote site, such as a metal shop or manufacturing plant by using tools well known in the metal working trade.

A preferred manufacturing method for the prefabricated members 20 is an automated means such as high speed punches and presses operated with appropriately configured molds to achieve a desire contour. Finished members 20 would then be shipped to a job site for installation by lower cost tradespeople.

With reference to Fig. 2, there is shown a detail of a typical lattice material 22. A preferred lattice 22 is typically formed of galvanized steel expanded to provide an hexagonal close packed array 48 of cells 50 bounded by strands 52. The strands 52 are formed of galvanized sheet steel typically about 0.020 inches thick. The cells 50 are elongated hexagons with major axis 54 about 11/16 inch long and minor axis 56 about 5/16 inch wide. Alternatively, the lattice 22 may be formed of lighter or heavier expanded metal, such as 1.75 lb/sq. yd. Or 2.5

lb/sq. yd. For smaller or larger preformed members. A suitable material is the galvanized steel diamond mesh of 3.4 lb/sq. yd. Made by Western Metal Lath Co. La Mirada, CA.\

With reference to Fig. 3, an alternative embodiment of a prefabricated plaster support member in accordance with this invention is shown. A paper backed lattice material may be used to make a member generally indicated by numeral 60. An example of such a paper backed lattice material is "CEM-LATH K" made by Cemco, of Industry, CA. "CEM-LATH K" is a 3.4 lb/sq. yd. Diamond mesh metal lath 62 backed with asphalt saturated "Kraft" paper 64 which may be used to form a plaster support member 60 in accordance with this invention. The paper backing 64 may be used to limit the amount of plaster which is needed to cover the member 60 after the member 60 is applied to a prepared structural wall (not shown).

The paper 64 extends a suitable distance such as 1-1/2 to 2 inches beyond the flanges 42, 44 and 3nds 38, 40 of the metal lath 62. The paper 64 extension provides an overlap with adjacent paper backed members (not shown), when aligned end to end, to ensure a continuous moisture barrier which may be required by local or state building codes.

It is contemplated that the paper 64 may be applied to the back of the lath 62 before forming the member 60. Application of the paper 64 to the back of the lath 62 may be made by adhesive means such as a hot glue (not shown) between the paper 64 and the lath 62. The paper 64 and the lath 62 may then be positioned between an upper mold and a lower mold having a desired shape (not shown). Application of sufficient pressure between the upper mold and lower mold will cause the lath 62 and paper 64 combination to be shaped into the desired member 60.

Other preformed shapes for prefabricated plaster form members in accordance with this invention are contemplated. With reference to Figs. 4 there is shown an embodiment of a prefabricated angled member 80. The angled member 80 provides a means to fit a continuous relief band around the corner of a building (not shown) without cutting and fitting straight members. The member 80 is made from open work lattice material as described above. The member 80 includes a first portion 82 and a second portion 84 joined at a common edge 86. The portions 82 and 84 may be joined by suitable means such as spot-welding, hot gluing or wire tying, as is well known in the trade. The portion 82 and portion 84 are indicated at right angles to each other, but can be any desired angle to accommodate intersecting structural walls at other than 90 degree angles. The portions 82, 84 are configured to have similar protuberant cross sections and protrude in a direction normal to the respective intersecting walls. The portions 82,

84 have respective lengths L1 and L2 measured from the common edge 86 to respective ends 38, 40. The portions 82 and 84 have top surfaces 85a, 85b intersecting at edge 86. The portions 82 and 84 have respective sides 88a, 88b, and 90a, 90b between the respective walls and respective top surfaces 85a, 85b. Mounting flanges 92a, 92b and 94a, 94b project outward from respective sides 88a, 88b, and 90a, 90b. Flanges 92a, 92b and 94a, 94b are configured to lie in intersecting mounting planes and are adapted to fit parallel to the respective adjacent intersecting structural walls.

The member 80 is attached to the studs of a prepared structural wall by means of nails or staples driven through the respective flanges 92a-94b. Self-tapping sheet metal screws are typically used to attach the flanges 92a-94b to metal studs. Sharp pointed "Streaker" self-tapping sheet metal screws available from Pacific Steel and Supply, San Leandro, CA, may be used for light gauge metal studs.

The ends 38 and 40 of member 80 are configured as before to abut or overlap contiguously with respective ends of prefabricated plaster form members having the same cross section as the member 80. One such abutting relationship with a plaster form member 20 having the same cross section as member 80 is indicated by the exploded view of member 20 shown in Fig. 4.

It is often desired to fit the perimeter of door or window openings with decorative plaster elements. With reference to Fig. 5, another embodiment of an angled prefabricated plaster form member in accordance with this invention is shown and generally indicated by numeral 100. In one embodiment, the member 100 is made from expanded metal lath as before described. A first portion 102 is joined with a second portion 104 at a common edge 106. Portion 102 includes a sheet of expanded metal lath bent for form spaced apart sides 110a and 110b, a top surface 114 and respective mounting flanges 116a and 116b. Portion 104 includes a sheet of expanded metal lath bent to form spaced apart sides 118a and 118b, a top surface 115 and respective mounting flanges 120a and 120b. Portions 102 and 104 are configured to be symmetrical about the common edge 106. The mounting flanges 116a, 116b, 120a and 120b lie in the same mounting plane indicated by arrows x, y. Flanges 116a, 116b and 120a, 120b are connected to the respective top surfaces 114 and 118 by the depending sides 110a, 110b and 118a, 118b. The top surfaces 114, 115 lie in the same plane and are parallel to the mounting flanges 116a, 116b, 120a, 120b.

ALTERNATIVE PREFORMED PLASTER RELIEF FORM MEMBER

The previous art method of attaching separate guide edge members to the hand formed plaster relief forms incurs extra handling and additional cost due to high rate labor charges. With reference to Fig. 6, there is illustrated a perspective view of a portion of an alternative preformed plaster relief form in accordance with this invention, and generally referred to as numeral 150. As before described with reference to Fig. 1, wherein similar reference numerals are used to designate similar elements, the member 150 is formed of an open work lattice material 22. A preferred lattice material is a diamond mesh expanded metal such as 3.4 lb/sq. yd galvanized metal lath made by CEMCO of Covina Lane, Industry, CA. The lattice material 22 of member 150 is preformed to include a top surface 31 having opposed ends 38, 40. The top surface 31 has a bending line along the surface 31. The bending line is normal to the opposed ends and defines an edge 33. The lattice material 22 is bent along the edge 33 to define a side 34 extending downward from the top surface 31. The side 34 extends downward a suitable distance from the top surface 31, to a second bending line 35, for example, 1-1/2 inches. The lattice material 22 is bent along the second bending line 35, to form a mounting flange 42 extending laterally outward from the side 34 of the member 150 to a suitable distance F, e.g. 1-1/2 inches. A similar bending line, edge, side and flange (not shown) may be formed in a symmetrical relationship to the side 34 as before described and shown in Fig. 1.

A prefabricated guide edge member 160 is shown in exploded relationship to the member 150 as member 160 for clarity. Guide edge member 160 is attached at a plurality of points 162 along a first edge 164 to the top surface 31 of the member 150. The edge member 160 is attached at a second plurality of points 166 to the side 34 of member 150. The method of attachment may be spot welding, or bonding with an adhesive such as hot glue. A preferred guide edge member 160 is the standard Bullnose regular cover nose wire having standard 1-1/2 inch legs made by Stockton Products, Covina, CA. The guide member 160 includes a guide edge 168 spaced apart from, and parallel to, the intersection of the top surface 31 and the side 34. The guide edge 168 is spaced apart a suitable distance, e.g. 5/8 inch from the top surface 31 of the member 150. The guide edge 168 provides an edge to guide a tool, such as a trowel, while applying plaster to the member 150, in such a manner that a uniform plaster coating thickness is easily achieved on the top surface 31. The guide member 160 includes a plurality of wire support members 170 and 172 connecting the guide edge 168 and the respective top 31 and side

34 of the member 150. A similar guide edge 174 spaced apart form the side 34 by a suitable distance, e.g. 5/8 inch provides an edge to guide a tool along the member 150 to achieve a uniform plaster coating thickness along the side 34.

The exploded view of the member 160 illustrates corresponding attachment points 162 and 166, the connecting wires 170' and 172' and the guide edge 168'.

With reference to Fig. 7, there is shown in cross section along the viewing plane indicated by 7-7 of Fig. 6, the contour of the edge guide member 160 attached to the top 31 and the side 34 of the member 150 at attachment points 162, 166 respectively. The top guide edge 168 and side guide edge 174 are shown as wires attached to the connection wires 170 and 172 and spaced apart from the top surface 31 and the side 34 by a suitable distance, typically 5/8 inch.

ALTERNATIVE CROSS SECTIONS FOR PREFABRICATED PLASTER RELIEF FORMS

With reference to Fig. 8a and 8b there are shown alternative cross sections for prefabricated plaster relief form members in accordance with this invention. Fig. 8a illustrates a member 200 having opposed sides 202, 203 configured in a stair-stepped shape to provide two layers of relief.

Fig. 8b illustrates a cross section of a prefabricated plaster relief form member 204 having a stair-stepped aspect with four corner edges 206, 208, 210, 212. Each edge 206-212 has a respective guide edge members 214, 216, 218, 220. Each guide edge member 214-220 provides a top and a side guide edge 214a, b-220a,b spaced apart from the respective corner edges 206-212 by a suitable distance, e.g. 5/8 inch laterally outward and vertically upward.

With reference to Fig. 9, the use of the prefabricated plaster relief form is herein described. In use, a structural wall is prepared having a plurality of studs 180 spaced a suitable distance apart and mounted vertically along a foundation 182. A layer of asphalted "Kraft" paper 184 for a moisture barrier is applied to the studs 180. A first layer of wire mesh or screen 186 (commonly called chicken wire) is then attached to the wall over the paper 184. A line is defined along the wall wherein the desired decorative architectural structure was to be placed. A plurality of prefabricated plaster relief form members 200 is aligned end to end along the line and attached to the wall by means of nails or staples 186 driven through respective mounting flanges 42, 44 into the studs 180. The light weight but substantially rigid lattice material 22 and uniformity of shape provided by the preformed members 200 would make the task of creating a

uniform, continuous relief band extremely easy. With reference again to the detail of Fig. 2, the array 48 of open cells 50 of the lattice material 22 provides ready access for the application of plaster to envelop the strands 52 and bond firmly with the lattice 22.

The prefabricated guide edges 160 and 190 of the preformed plaster relief form 200 provide guides for guiding a tool to apply plaster to a uniform thickness along the relief form members 200.

One method of applying a cementitious coating is the well known three step process. A first coat of cementitious material, typically plaster, called a scratch coat, would be applied, either by hand trowel or by spraying from a nozzle connected to a gun feeder, hopper/mixer and pumps as is well known to those skilled in the art.

One preferred formulation for the scratch coat is set forth in Table 1. It is within the teachings of this patent to use any other suitable cementitious material to form the coating for the wall and prefabricated plaster form 20.

1 part Colton Portland Cement type II
3 parts common coarse sand
5 to 8 gallons of water per sack of cement, depending on the water content of the sand

Table 1

The scratch coat covers the wall and the sides and top surface of the form members 20 to a uniform depth of about 3/8 inch. The scratch coat is cured for a suitable time, such as 24 to 48 hours, according to the State of California Uniform Building Code 1988 Edition page 4706, herein incorporated by reference.

A second coat of plaster about ¼ to ¾ inches, with a preferred thickness or 3/8 inch, called the brown coat, is applied similarly to the wall and plaster forms 20. The brown coat is cured for a suitable time such as 7 to 14 days minimum. A suitable formulation for the brown coat is the same as Table 1, with the addition of a 3 to 5 shovelsful of sand per sack of cement.

A final plaster coast incorporating the desired color is applied similarly to a depth of about 1/16 to 1/8 inch. The formulation for the color coat is typically a mechanically blended compound of portland cement, hydrated lime and inert aggregates (16/20 or 20/30 sand), such as

that supplied by La Habra Stucco, Anaheim, CA. Material standards preferably meet Federal Specification SS-L-351, Type F for hydrated lime, and Type 1 ASTM C150-56: Federal Specification SS-C-192B, for white portland cement.

FURTHER EMBODIMENTS

A further embodiment of the invention is illustrated in Fig. 11. This embodiment takes advantage of an existing product used in construction. In this embodiment the relief form member 200 is made of a metal mesh 202 of the type known as welded wire, preferably in the form of 2"X2" mesh, using 16 or 17 gauge wire. Paper backing comes attached to the wire mesh when it is made and sold as by manufacturers for plastering purposes. In this form it is referred to in the industry as welded wire lath. An example is that used in a product sold as Stucco-Rite by K-Lath of Fontana, CA. The attached Appendix A is a copy of K-Lath's catalogue A465,09200/KLC, Bayline 5409 showing various forms of lath.

Referring to Fig. 11, the welded wire mesh 202 is formed as described above into a channel shape having mounting flanges 204, sides 206 and a top 208. The mounting flanges 204 are preferably ½ inch to 1 ½ inch extending away from the sides 206. The height of the side 206 is dictated by the desired design dimension, 1½ inches being exemplary. Paper backing 210 follows the form of the channel and is attached to the wire mesh 202 by an interweaving as known in its preparation as lath. The width of the top 208 is also a design choice, 6 to 12 inches being exemplary. The relief form member can be of any selected length for the use, and can be preformed in exemplary lengths such as 6 to 10 feet.

This embodiment has a further alternative in which a product known as double wire mesh is used. The double wire mesh material is used in a lath product sold as Stucco Rite Double Wire by K-Lath of Fontana, CA, as described in the catalogue identified above. The double wires are provided at selected intervals. The double wire form provides a nailing space between the double wires to catch the nail head and prevent movement during installation.

When forming the channel shape using the welded wire mesh, the bends can be anywhere, but referring to Fig. 12, it is preferable to have lengthwise extending wires 212 at the bends or corners, as well as having a lengthwise extending wire proximate the outer termination 214. Since the welded wire mesh comes in specified dimensions, whether single or double wire, to place the lengthwise wires at the bends or corners dictates the dimensions of the channel. This

structure gives additional rigidity which aids in installation. The paper backing 210 is shown attached to the wire mesh 202 by interweaving as is known in the manufacture of welded wire lath. A second layer of paper 215 is commonly employed having an asphaltic or other waterproofing component.

The foregoing alternatives using welded wire mesh can be used as described, or with corner beads also known as edge metal or edge guides as previously described and shown diagrammatically in cross-section in Fig. 13. Corner beads are sold by various manufacturers such as CEMCO of Industry, CA. Appendix B is a copy of CEMCO's catalogue of Metal Lath and Accessories. Without the corner beads, certain architecture styles such as Spanish or mission finish are facilitated. With the corner beads or edge guides, a smooth finish is achievable. The corner beads can be attached by any suitable means, such as by hot glue. Referring to Fig. 13 the wire mesh 202 has corner beads 216 attached at the corners of the top 208 and sides 206. Paper backing 210 is shown.

Another alternative construction of the invention uses only corner bead members joined together to form the channel. This is shown diagrammatically in Fig. 14 in which corner beads 220 and 222 form the flanges 224 and along with corner beads 226 and 228, form the sides 230 and the corner beads 226 and 228 form the top 232. To form the top 232, corner beads 226 and 228 may overlap as shown at P although they can abut. The four corner beads are joined along their length by any desired means such as wire ties, welding or hot glue. Also, paper backing 234 is applied, held in place such as by hot glue, and can include an asphalt coated layer. The corner beads can be any known type, such as bullnose, or straight wire edge guides.

Referring to Fig. 15, in another alternative the channel is constructed by using a product known as rib lath. Rib lath is a known product, similar to the expanded metal described above, but having parallel ribs of solid, unexpanded portions extending lengthwise between areas of expanded metal. The rib lath is shown in the CEMCO catalogue. The ribs may be about 3/8" wide and spaced apart about 1-1/8 inch with three expanded portions between them. Referring to Fig. 15, the rib lath 238 has the ribs 240 and the expanded metal portions 242 between the ribs. The rib lath 238 is formed into a channel shape as shown diagrammatically having raised corners where the sides and top meet with ribs 240 at the corners to serve as edge guides. In Fig. 15, the longer lines 240 represent the ribs and the shorter lines and spaces 242 represent the expanded metal portions. The rib lath structure is preferably also used with paper backing as described

above. In this form the corner bead or edge guide is built into the channel form itself. The sides of the channel could be convergent from top to flange to provide an edge guide for the sides, or the sides could be bent, like the top so that the corner protrudes to provide an edge guide for the sides.

Referring to Fig. 16, in another alternative series of structures any of the foregoing shapes can be formed using woven wire also known as chicken wire for the basic channel shape. This wire is referred to as Stucco Netting in the K-Lath Catalogue. It is preferably augmented with paper backing and as desired with corner beads as described above. The self-furring form is preferred to keep a space between the wire and the paper backing. The woven wire is formed into a channel 250, with flanges 252, sides 254 and top 256. Corner beads 258 are attached as well as paper backing 260.

Corner beads are commonly made with lengthwise wires at the apex to form a bullnose or straight shape and undulating and straight wires combined to provide an extension away from the apex. In the CEMCO catalogue this is shown on page 8 as CEMCORNER. Figs. 17a and 17b shows this structure with wires 270, 272 and 274 defining an apex, and the remainder of the structure of undulating wires 276 and straight wires 278 forming side extensions away from the apex. In the present invention, referring to Figs. 17a and 17b, this type of corner bead can be used as shown in the CEMCO catalogue, but in a further embodiment the side extensions can be cut away to make it smaller. Selected places for lengthwise cutting away are shown at A-A, B-B, C-C and D-D. The form created by the cutting away along line D is shown in Fig. 18.

In all of these alternative constructions, no underlying structural support member is used. In particular any wood boards are absent.

In all of these further embodiments, the shape of the channel can be made in the stepped form as shown in Figs. 8a and 8b except that the channel is made of materials as described in these further embodiments and absent any additional underlying support such as wood boards.

STILL FURTHER EMBODIMENTS

It can be fully appreciated that as with all construction it is a constant creative goal to reduce cost while maintaining or improving functional qualities. Such a goal has been demonstrated from the foregoing embodiments and explanations. Yet further embodiments that go even further toward economic construction of architectural trim elements have been invented. For clarity it is preferred to refer to the structure after it has been installed and plastered as an

architectural trim and to refer to the structure prior to its installation and plastering as a relief form. That is, a relief form is constructed so that it can then be used on a building to create an architectural trim.

In the broadest aspect the further embodiments of the invention uses as the structural elements, connected wire assembly members that are prepared in lengths and configured to provide the resultant relief forms by being fastened together. One aspect of the connected wire assembly members are welded wire assembly members. Another aspect is twisted wire assembly members. In any case the connected wire assembly member must have sufficient strength. This is largely controlled by the wire size. It is considered that for welded wire assembly members a range from 20 gauge to 16 gauge wire is acceptable. Heavier than 16 gauge is unnecessary and lighter than 20 gauge is insufficiently rigid. The preferred range is 18 gauge to 16 gauge and the best is 17 gauge. Each connected wire assembly member has two portions at a selected angle to each other portion joined at a corner. The corner has at least one aid wire running lengthwise. In the case of twisted wire assembly members the at least one tool guide wire has to be attached by an additional means such as welding. As will be seen one leg portion defines the height dimension.

In a preferred aspect the further embodiments use commercially available corner aid product as the structural elements. Corner aids are well known construction materials that are applied to corners to facilitate the application of plaster. They come in 10 foot lengths as well as other lengths They are called by various generic names such as corner reinforcement, corner aid, and corner. They are made by a number of companies and the manufacturers make them in somewhat different shapes and configurations. CEMCO of Industry CA. calls them CEMCORNER. Jaenson Wire Company of Fontana CA. calls them Best Corners. K-Lath, of Fontana CA. a division of Georgetown Wire Company calls them KwikCorner, KwikFlange and KwikRound.

By using corner aids to build relief forms for architectural trim, cost is reduced; but in addition construction of a variety of architectural trim shapes is facilitated. Also the survivability of the trim is enhanced. The invention resides in the assembly of parts and methods of assembly which includes the new use of corner aids as well as in the process of creating the relief form and, upon, installation and application of plaster, the process of creating architectural trim members constructed using those parts.

Corner aids come in various configurations. They are made of wire, either 16 or 17 gauge usually galvanized being very common and preferred for the present invention, the 17 gauge being most preferred. Since corner aids are made by several manufacturers it is the intent for purposes of this description to include all corner aids that are made of wire welded together and having legs at an angle and a corner aid at least one longitudinal wire for guiding a tool. They come as "sharp" having a single longitudinal wire at the apex or "bullnose" having a plurality of longitudinal wires, three or four being common, spaced around a rounded apex. They can have a single outside wire on each leg or double outside wires. The body of the corner aid is constructed of undulating wires such as two opposed waveforms for each leg of the corner aid and one forming the top. All the parts are welded together.

Figure 19 shows an end view, also referred to as a profile, of a commercially available bullnose corner aid 300. The bullnose form is generally preferred for use in the present invention as is the double nailing wire form. However the right angle form or any of the other forms may also be used. The line 302 in Fig 19 represents an end view of the undulating welded-together wires that extend the length of the corner aid 300. For purposes of this description it is useful to define the corner aid 300 as having leg portions 304a and 304b, corner or nose portion 306 and ends 308a and 308b. The dots 310a, 310b, and 310c represent longitudinal wires that define the corner of a bullnose type corner aid 300, in this figure, corner portion 306. These wires help to guide a plaster's tool and are referred to herein as tool guide wires. The dots 312a and 312b represent intermediate longitudinal wires welded to the inside of the undulating wires. The dot pairs 314a and 314b represent the longitudinal double nailing wires near the ends 308a and 308b. The wires 310a, b and c and 312a and b and 314a and b are all parallel and are welded to the undulating wires 302 and extend longitudinally the length of the corner aid 300. The bullnose corner aid 300 has an opening of about 3 inches and the legs 304a and 304b are at an angle of about 90 degrees as shown in Fig 19.

With reference to Figs 20- 27 the process for constructing relief forms for architectural trim members using commercially available corner aid will be explained.

The majority of relief forms of the invention are assembled from two corner aids either alone or in combination with other corner aids that may be adjusted in a specified way to provide the basic parts for the relief form. The two corner aids referred to as side corner aids define the corners of the relief form and ultimately the profile of the architectural trim element. An

exemplary adjustment is seen in Fig 20 in which the dimension of the opening of a corner aid 300 has been reduced to about 2 1/8 in. by reducing the angle between the leg portions 304a and 304b. This adjustment will be applied in a preferred embodiment to side corner aids although it will be appreciated that side corner aids may be used without adjustment. This will be described in greater detail below.

In Fig 21 there is shown an end view of a particular relief form member after it has been made. It is constructed from two pieces of 10 foot lengths or other length of bullnose corner aid 300 whose openings have been reduced as shown in Fig 20. The two lengths of corner aid 300 are placed so that leg portions 304a approximately approach near or meet centrally at "A" and leg portions 304b extend downwardly (it is not intended that any distinction in the construction be implied between leg portion 304a and leg portion 304b, they are interchangeable). A paper insert 316 extends inside the space formed by the two corner aids 300. The purpose of the paper is for backing the first coat of applied plaster. The paper can be perforated to allow plaster keying and water to drain.

A suitable paper is Ratan Red Rosin Sized Sheathing 4lb/ Standard available from Salinas Valley Wax Paper Company in Salinas, CA. Another suitable paper is a single-ply, heavyweight, hard-sized kraft paper called Fortifiber Utility Paper from Fortifiber Building Products Systems of Reno NV. Also it has been found that recycled paper is preferred because it has greater water absorbency which is beneficial to absorb water from the plaster.

As shown in Fig 21 side corner aids 302a and 302b have been slightly adjusted in angle as described above. Reducing the angle provides a better profile for application of plaster. Specifically, a sufficient space is established for the application of plaster with the adjustment. With sufficient demand it is contemplated that the corner aid could be acquired from manufactures with the desired preferred angle. Of course instead of corner aid as connected wire assembly can be used that is specifically designed and manufactured for the present application. The three parts, the two corner aids 300 and the paper insert 316 are held together by glue. At spaced intervals along the length of the relief from glue deposit 318 is deposited in the form of hot melt glue. Glue deposit 318 encapsulates a portion of the corner aids 300 and sticks to the paper insert 316. Also glue deposits 320 also at spaced intervals along the length of the relief form hold the paper insert 316 to the leg portions 304b.

Construction of the relief form is now described with reference to Figs 22, 23 and 24

The adjustment of the angle of the corner aid 300 is accomplished in a fixture 320 as shown in Fig. 22. The fixture 322 has a horizontal leg 324 and a hinged leg 326. The horizontal leg 324 and hinged leg 326 are attached by a hinge 328 so that hinged leg 326 can move in an arc "B". On the inside of the horizontal leg 324 are spaced apart fingers 330 and threaded through the end of the hinged leg 326 is an adjusting assembly 332 that adjustably limits the movement of the hinged leg 326. The fixture is long enough to operate on a ten foot length of corner aid, so the fingers 330 will be spaced along the length of the horizontal leg 322 and there may be more than one of the adjusting assemblies 332 along the length of the hinged leg 326. The corner aid 300 is placed in the fixture as shown in Fig 21 and the hinged leg 326 of the fixture is pushed closed until the adjusting assembly 332 stops it so that the leg portions 304a and 304b of the corner aid 300 are adjusted to the desired angle.

. With the corner aids 300 prepared an assembly fixture 340 is provided which is shown in Fig 23. The assembly fixture 340 has a table 342 which can be a series of spaced apart frames 344. Laid onto the table 342 is a core piece 346 that has a rectangular cross-section.

The core piece 346 has a selected height "H" and width "W" (see Fig 24) For the relief form member shown in Figs. 21 and 24 the dimensions are about H = 1 in. and about W = 3 1/4 in. It can be appreciated that in the prior art method a 2x4 stud or other selected wood planks were used (such as a 2x6), being nailed to the wall. As will be appreciated using the present invention, the relief form and the trim resulting from its use can be made in a wide range of dimensions for its profile. Also as will be seen numerous special relief forms can be constructed, not only single rectangular profiles, but also stepped profiles and cornice shapes, to name a few. Therefore an architect can specify the shape and dimensions of the architectural trim member to suit and the assembly fixture can be made to produce relief forms that will result in the specified trim member. The approximate size of the the relief form shown in Figs 21 and 24 is about 5 in. wide and about 3 1/2 in. high. But, as indicated by the arrow "A" in Fig 21. the width dimension can be varied as long as good fastenings are possible to keep the side corner aids 300 rigidly fastened to each other. In the case of the use of hot melt glue spots 318, the side corner aids 300 can be slightly overlapped or even spaced apart somewhat so long as a good glue spot can be applied.

The assembly fixture 340 also includes a set of alignment brackets 348 which have a height leg 350 and a width leg 352 as shown in Figs. 23 and 24.

Referring to Fig. 24 the construction of the relief is described. A length of appropriate paper 354 is selected and cut to size. The paper 354 is folded onto the core piece 346 The paper has a length consistent with the length of the relief from, 10 feet being typical; it has a width sufficient to allow it to be loosely draped over the core piece 346 and to extend to or near the bottom of the core piece 346. Next, the previously prepared corner aids 300 are placed on top of the paper 354 to define parallel opposed elongate side corner aids.

Then, the alignment brackets 348 are set on top of the side corner aids 300, spaced apart along the length of the core piece 354 (see Fig. 23). The alignment brackets 348 will adjust the placement of the side corner aids 300 so that they are aligned along the length of the core piece 354 and also with each other, setting a constant width D as determined by the dimension D across the inside of the legs 350 of the alignment brackets 348 and a constant height E along the length. For best results, the corner aids 300 are manually urged apart so that they will contact the legs 350 of the alignment brackets 348. Now it is convenient to define the legs 304a as upper width legs whose placement and length will set the width of the relief form and legs 304b as height legs that will set the height of the relief form.

Next using a hot glue application machine 356 (Figs. 23 and 24), hot glue is spot applied along the length of the relief form at selected intervals. The hot glue is applied so as to create a glue spot 358 that encapsulates adjacent or overlapping portions of each of the legs 304a and to also adheres to the paper 354. The paper 354 should also be spot glued to create glue spots 360 at the leg portions 302a and 302b of the corner aid 300 that define the sides of the relief form so as to provide backing for the plaster when it is later applied.

The result is a structurally firm relief form that can then be attached to a building structure with nails and subsequently plastered, such as with standard three layer plaster procedure (a scratch cost, a brown coat and a color coat) as is well known in the art.

Referring to Fig 25, the next step in creating a trim is to nail or in any other way, fasten, the relief form 300 to a wall 315. It should be appreciated that the nailing or other fixing to the wall is not for strength purposes, but simply to position the relief form for plastering. It is the plastering that provides adequate strength. If it is new construction the relief form should be attached to the wall before any plaster is applied to the wall. If it is a later application, then the wall can be prepared by removing plaster from the wall adjacent to the area where the relief form will be installed; or the relief form can be simply installed over existing plaster finish.

As can be seen in Fig 25, after the relief form 300 is nailed with nails 362 (the nails can be placed in any or varied places in the relief form so long as the nails heads hold it in place) to the wall. The nails 362 will pass through the wall lath 368 into wood structure 370. Then the plaster is applied. As shown in Fig 24, to complete installation of the relief form and create an architectural trim, the common three step plastering process is shown, the scratch coat 372, the brown coat 374 and the color or finish coat 376 which is merged with the plaster 378 on the wall. The application of plaster is known and therefore it is not necessary to explain it in detail. Other plastering procedures can be used, for example the diamond wall method.

Numerous other configurations of relief forms are available using the basic concept of the invention as modified in application. Some of these are now described.

Referring to Figs 26 and 27, an alternative for the relief form 380 is shown in which a third corner aid 382 is used. This configuration can also be used for wider widths and allows greater adjustability for selecting a width. Note that Figs 25 and 26 show corner aids that have four linear wires at the nose (also called the corner) while the previous description shows three linear wires at the nose; this is merely illustrative of the interchangeability of corner aid constructions in the present invention. To prepare the side corner aids 300, the same procedure as described above is used. The additional corner aid 382, called a channel corner aid to distinguish it from the side corner aids 300, is prepared by flattening a corner aid to a gentle curve so that it extends into the space in the side corner aids 300. Paper 384 is in place inside the channel formed by the corner aids. Glue spots 386a and 386b are placed at selectively spaced intervals along the length of the relief form to encapsulate the side corner aids 300, the channel corner aid 382 and to adhere to the paper 384. The paper 384 is also glued as described above at 388a and 388b. The degree of flattening of the channel corner aid, to be either flat or bowed is selected to allow good interfitting with the side corner aids and to give good rigidity. This assembly allows the width of the relief form to be selected by either or both selecting a wider channel corner aid or selecting more or less overlap of the channel corner aid and the side corner aids. Also, although use of corner aid to create the channel corner aid is convenient, that member can more broadly be called a channel element and can be made of any connected wire assembly of sufficient strength; its width being selected to suite the desired width of the relief form and the amount of overlap desired.

The relief form 380 shown in Fig 26 is made according to the same method described above except that after the paper 384 is placed on the core 346, the channel corner aid 382 is placed over it; then the side corner aids 300 are put in place and the alignment brackets 350 are put in place to finalize the shape and then the glue spots are applied. Of course both the core and the alignment brackets are made with selected dimensions to provide the desired size of the relief form.

Referring to Fig 28 another alternative relief form 390 is shown although it is in generally similar to that shown in Fig 27 in that it uses two side corner aids and a single channel corner aid. In this form the side corner aids 300 are separated by a greater distance than as shown in Fig 26 and the channel corner aid 392 is flatter. Paper 394 is in place below the channel corner aid 392. Glue spots 396a and 396b at selected spaced apart locations encapsulate the side corner aids 300 and the channel corner aid 392 and adhere to the paper 394. Also glue spots 398a and 398b are applied. This relief form is made in the same procedure as described above; but the alignment brackets and the core piece used are wider to define and control the greater spacing between the side corner aids 300; and the paper has to be wider. The size of the relief form of Fig 27 is, for example, nominally 6 7/8 in. wide.

Fig 29 shows a relief form similar in height dimension to that shown in Fig 28 except that in this form two channel corner aids 400 and 402 are used. Glue spots 404a and 404b are placed at selected intervals as are glue spots 406a and 406b. Paper 410 is similarly in place. The method of making this version is generally the same except that the core piece, the paper and the alignment brackets have to be sized to provide the desired dimensions, as is the case for all of the following versions. This provides greater strength and a longer range of size availability.

It can be appreciated that adjustment of the width of the relief forms is allowed by use of wider or thinner alignment brackets so long as it is possible to apply the glue spots and sufficient rigidity is maintained. For example in the case of the relief form of Fig. 29, the overlapping channel corner aids 400 and 402 can be placed to be more or less overlapped in order to shorten or lengthen the overall width; and the side corner aids can be placed closer or further apart.

Additional relief from versions are now described with reference to schematic illustrations. In each case the fixtures for spacing are selected and the channel corner aids are opened to be bowed or straight as desired. Glue spots are applied as appropriate.

Fig. 30 shows a relief form version similar to the one shown in Fig. 29 except that a third channel corner aid 412 is employed to provide the added width. Paper 414 is placed below the corner aids The outer two channel corner aids 404a and 404b overlap the central channel corner aid 412, but do not necessarily overlap each other. Glue spots are applied in selected places along the width.

Fig 31 shows an added strength version useful in wider versions. In the added strength version an additional central channel corner aid 416 is used but it is placed with the bowing opposite, that is, bowed upwardly.

Fig 32 shows another added strength version, particularly useful for wide configurations, in which an additional channel corner aid 418 is placed below the paper. It is spot glued to the paper 414 from below by turning the relief form over. The bowing can be configured to provide added rigidity by giving it a truss shape bowed downwardly as shown in the figure. This configuration is particularly desirable in very wide versions, for example having an overall nominal width of 13 in. or more. Even more strength can be achieved by adding the central channel corner aid 416 as shown in Fig 31. Preferably the corner aid 418 below the paper is curved enough to approach contact with the wall on which it will be mounted to prevent collapsing or bending inward as plaster is applied.

Combined versions are also possible. For example as shown in Fig. 33 a smaller version 420 like the one shown in Fig 28 is mounted on top of a larger version 422 like the one shown in Fig 29 to give a two step stacked configuration 424. The two versions are hot spot glued together. After application of plaster, this configuration will look like 426 as seen in Fig 34.

A very thin section version 428 is shown in Fig 35 in which the side corner aids 300 are substantially overlapped, with paper 430 below. The process is the same as described above with an appropriately dimensioned core (a core can be rotated 90 degrees), alignment brackets and paper.

Fig. 36 shows a stacked combination of the version 428 of Fig 35 mounted by spot gluing on top of a version 432 similar to the construction shown in Fig. 29 (note the reduced overlap of channel corner aids). Fig 37 shows the profile of the completed two step architectural trim 434 made from the relief form of Fig. 36.

Figs 38 and 39 show respectively an offset two step stacked relief form 436 and the profile of the resulting architectural trim 438.

Fig 40 shows a two step stacked configuration of relief forms, a smaller relief form 440 stacked on a larger relief form 442 and in which an auxiliary piece of cut down corner aid 444 is attached to the stacked relief forms 440 and 442. The resulting architectural trim 446 can be used as a trim feature or as a cornice or as a pot shelf under a window.

The fastenings to be used in this invention can be selected; including for example weldments and the hot melt glue as described above.

The method of the invention includes starting with a desired architectural trim configuration such a rectangular one step or two stepped profile or a more complicated cornice shape, for example and calculating backward , that is, conceiving the configuration of connected wire assemblies, channel elements, paper, fastenings that are required to provide the structural body needed to realize the trim member, making the prefabricated relief form as described above, and then after the prefabricated relief form has been applied to a wall, applying the plaster to realize the final shape.

As the foregoing descriptions of various possible configurations and combinations of relief forms illustrates, numerous shapes can be realized for resulting architectural trim by variations in construction of the relief form. It is the preferred method that, aside from the standard rectangular single and symmetrically two step stacked shapes; any desired shape can be realized by starting from the desired end result architectural trim. Then, the corner aid configuration is devised to provide a relief form that will allow plastering to give the desired end result. While this generally comprises the use of complete corner aids, a corner aid can be cut or bent to fit odd shapes. As noted, broadly, connected wire assemblies can be constructed and used, while one such assembly, commercially available corner aids are a preferred structure.

While the foregoing detailed description has described the embodiments of the plaster relief form member in accordance with this invention, it is to be understood that the above description is illustrative only and not limiting of the disclosed invention. Thus the invention is to be limited only by the claims as set forth below.